

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/029710

International filing date (day/month/year)  
10.09.2004

Priority date (day/month/year)  
11.09.2003

International Patent Classification (IPC) or both national classification and IPC  
C09G1/02, C09K3/14, H01L21/321, H01L21/768, H01L21/3105

Applicant  
CABOT MICROELECTRONICS CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US2004/029710

1AP20 RCG 016110 17 FEB 2006

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/029710

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**Box No. II Priority**

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1. ☐ The following document has not been furnished:

☐ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	7,19,28,41,50,62,72,85
	No: Claims	1-6,8-18,20-27,29-40,42-49,51-61,63-71,73-84,86-92
Inventive step (IS)	Yes: Claims	
	No: Claims	1-92
Industrial applicability (IA)	Yes: Claims	1-92
	No: Claims	

2. Citations and explanations

see separate sheet

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

10/568727  
PCT/US2004/029710 17 FEB 2006  
International application No.

PCT/US2004/029710

**Re Item V.**

- 1 The following documents are referred to in this communication:  
D1 : US 2001/006224 A1 (ITAKURA TETSUYUKI ET AL) 5 July 2001 (2001-07-05)  
D2 : EP 1 229 093 A (FUJIMI INC) 7 August 2002 (2002-08-07)
- 2 INDEPENDENT CLAIMS 1, 21, 43 and 64
  - 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 21, 43 and 64 is not new in the sense of Article 33(2) PCT.  
Document D1 discloses (the references in parentheses applying to this document):  
A CMP slurry for polishing tantalum containing metal films comprising, (A) a silica abrasive, (B) 0,01-10 % wt of an alkali earth salt such as Ca, Sr, Ba salts, (C) 0,01-15 % wt oxidizing agent, (D) water. The pH of the slurry is 3-9.  
Further a method of polishing is disclosed.  
See for the relevant passages the citations in the International Search Report.
- 3 DEPENDENT CLAIMS 2-6, 8-18, 20, 22-27, 29-40, 42, 44-49, 51-63, 65-71, 73-84, 86-92  
Dependent claims 2-6, 8-18, 20, 22-27, 29-40, 42, 44-49, 51-63, 65-71, 73-84, 86-92 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).
- 4 DEPENDENT CLAIMS 7, 19, 28, 41, 50, 72, 85  
The combination of the features of dependent claims 7, 19, 28, 41, 50, 72, 85 are not known from D1. The reason are as follows:  
Document D1 does not disclose a CMP composition comprising an inorganic acid. Therefore, the subject matter of claims 7, 19, 28, 41, 50, 72, 85 is novel (Article 33(2) PCT).

However, the subject-matter of claims 7, 19, 28, 41, 50, 72, 85 does not involve an inventive step. The subject matter of said claims relates to the presence of an inorganic acid in the CMP composition. This is considered as a mere variation within the ambit of claim 1 and it has not been shown that the technical features thereof substantiate to a technical effect, in order to solve a technical problem in a non-obvious manner, in view of D1 and D2 as to establish an inventive step (Articles 33(3) PCT).

**Re Item VIII.**

The subject matter of claims 1, 21, 43 and 64 is not clear because component (b) is indicated as an alkaline earth metal, however there is no support in the description that (b) is present in its metallic form. There is only support for the metal-salt, see §0022 of the description (Articles 5 and 6 PCT).

Independent claims 1 and 21 relate to CMP composition and independent claims 43 and 64 relate to a method of polishing a substrate. The applicant is made aware that in certain national or regional jurisdictions an application may contain more than one independent claim in the same category only if the subject matter of the application involves one of the following:

- (a) a plurality of inter-related products;
- (b) different uses of a product or apparatus;
- (c) alternative solutions to a particular problem, where it is not appropriate to cover these alternatives by a single claim.

None of the three appears to be applicable, in the present case (Art 84, Rule 29(2) EPC).

The use of the vague term "about" renders the definition of the subject matter of the claims unclear (PCT Guidelines part II, 5.38). The term "about" should be deleted from the claims and the relevant passages in the description.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

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AUTHORITY (SEPARATE SHEET)**

International application No.

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In example 6 on pages 20 and 21 of the description, the compositions should be numbered 6 instead of 2.

To meet the requirements of Art. 5 (PCT) the expression "incorporated by reference" on page 21, §0066, related to cited patent literature does not appear to be necessary and should thus be deleted (PCT Guidelines, 4.26).

The last paragraph on page 22 of the description implies that the extent of the protection may be expanded in some vague and not precisely defined way. This passage should be deleted (Guidelines 5.30 PCT).